

**Science: Inheritance and Classification**

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| 1. Variation | | |
| Organisms within a species have variations. | | |
| **Inherited variation** | | **Environmental variation** |
| Variations caused by genes gained from parents | | Variations caused by surroundings |
| **Examples** | | **Examples** |
| Eye colour | | Scars |
| Blood group | | Accent |
| Sex | | Length of hair |
| Some variations are both **inherited and environmental**; height, weight, skin tone, intelligence | | |
| **Key words** | | |
| **Variation** | The differences in characteristics between living things | |
| **Species** | A group of organisms that are very similar to each other and can produce fertile offspring | |
| **Characteristics** | The individual differences between organisms | |

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| Challenge Questions | |
| 1 | Why do you think animals and plans are sorted into groups? |
| 2 | Describe why identical twins are only genetically identical |
| 3 | Explain the adaptations of organisms to prevent being eaten |
| 4 | Why do you think climate change is affecting the population numbers of polar bears? |

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| 1. Continuous and discontinuous variation | |
| **Continuous variation** | **Discontinuous variation** |
| A characteristic that changes gradually over a range of values | A characteristic that has a limited number of possible values |
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| 1. Genes | | |
| **Key words** | | |
| **DNA** | Genetic information. It has all the instructions a living organism needs to grow, reproduce and function | |
| **Gene** | A small section of DNA that has the genetic code for a specific characteristic | |
| **Identical twins** | | **Non identical twins** |
| From a single egg fertilised by a single sperm that splits in half before implantation | | From separate eggs that were released at the same time and fertilised by separate sperm |
| They have the same DNA code and will be the same sex | | They have different DNA code so can be different sexes |



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| 1. Adaptations | | |
| Organisms have special features that make them suited to their environment | | |
|  | Adaptation | How it helps it to survive |
| 1 | Waterproof fur | Prevents the cold water toughing the skin |
| 2 | Large wide feet | Prevents sinking in the snow |
| 3 | Small surface area to volume ration | Reduces heat loss from the skin |
| 4 | White fur | Camouflages it against the snow so it can hunt prey |
| 1  4  3  2 | | |

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| 1. Plant reproduction | | | |
| 1 | Petal | Attracts insects for pollination | 4  3  2  1 |
| 2 | Anther | Covered in pollen |
| 4 | Stigma | Captures pollen from other plants |
| 5 | Ovary | Where fertilisation takes place |

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| 1. Classification | | |
| **Key Word** | **Definition** | |
| Vertebrate | An animal that contains a back bone | |
| Invertebrate | An animal that does not contain a back bone | |
| The vertebrates can be split into 5 main groups | | |
| Group | | Common Features |
| **M**ammal | | Warm blooded  Feed young with milk  Internal fertilisation  Fur covered skin |
| **R**eptile | | Cold blooded  Hard scaly skin  Lays leathery shelled eggs |
| **F**ish | | Cold blooded  Slimy scales  Gills  External fertilisation of soft jelly eggs |
| **A**mphibian | | Cold blooded  Slimy skin  External fertilisation of jelly like eggs |
| **B**ird | | Warm blooded  Lays hard shelled eggs  Wings  Feathers |